

REMARKS

Herein, the "Action" or "Office Action" refers to the Office Action dated 11/16/2004.

Applicant respectfully requests reconsideration and allowance of all of the claims of the application. Claims 1-57 are presently pending. Claims amended herein are none. Claims withdrawn or cancelled herein are none. New claims added herein are none.

Substantive Claim Rejections

Claim Rejections under §§ 102 & 103

The Office rejects all of the pending claims under §102 and/or §103. For the reasons set forth below, the Office has not shown that cited references anticipate (under §102) the rejected claims. For the reasons set forth below, the Office has not shown made a *prima facie* case showing that the rejected claims are obvious (under §103). Accordingly, Applicant respectfully requests that the rejections be withdrawn and the case be passed along to issuance.

The Office's rejections are based upon the following references:

- Gossler: *Gossler et al.*, US Patent No. 5,799,173 (issued 8/25/1998);
and/or
- Luzzi: *Luzzi et al.*, US Patent No. 6,321,263 (issued 11/20/2001).

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324.9256
F: 509.323.8979
www.lee&hayes.com

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Overview of the Application

The Application describes a technology for remotely and dynamically monitoring the availability of the members of a load-balancing cluster. The technology provides a dynamic, exocluster application-layer monitor for dynamically monitoring and/or dynamically controlling the members of a load-balancing cluster.

The exocluster application-layer monitor is an active monitor—a controller. It may actively control the members that it monitors. The exocluster application-layer monitor is protocol agnostic. The exocluster application-layer monitor can dynamically adjust so that it can monitor all of the members of the cluster as members are added and removed.

Cited References

The Office cites Gossler as its primary references in its anticipation- and obviousness-based rejections. The Office cites Luzzi as its secondary reference in its obviousness-based rejection.

Gossler

Gossler describes a technology for dynamically controlling the number of servers in a transaction system comprising at least one service unit for processing service requests. Each service unit comprises a queue for receiving and queuing the incoming service requests and a plurality of servers for executing the service requests.

Gossler describes a technology that uses the following three steps from the point of view of the queue of each service unit:

- monitoring the current number of service requests and the current number of servers allocated to a service unit of a service point,
- determining an optimized number of servers for a service unit dependent on the current number of service requests and the current number of servers, and
- allocating the optimized number of servers for a service unit of a service point.

Anticipation Rejections

Based upon Gossler

The Office rejects claims 1-13, 15, 20-32, 34, 37-43, 46-51, and 54 under USC § 102(b/e) as being anticipated by Gossler. Applicant respectfully traverses the rejections of these claims. Based on the reasons given below, Applicant asks the Office to withdraw its rejection of these claims.

Claim 1

With the cited portions of Gossler and the Office's comments provided in brackets, this claim recites:

- dynamically determining present members ["servers", line 42, col. 4] of a load-balancing cluster; ["dynamic workload balancing method provided by the queuing monitor 85 or any other queuing monitor order to employ an optimized number of servers for each service unit to be monitored," lines 40-43, col. 4]

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
www.lee-hayes.com

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- **monitoring** ["the queuing monitor 85 monitors and controls the servers for each one of the service units of the service point," lines 16-19, col. 3] **application-layer** ["the queuing monitor 85 provides a dynamic workload balancing and a defined structure for the processes of the server," lines 54-57, col. 3] **availability of one or more members** ["the minimum and the maximum number of the servers to be available to execute the processes," lines 4-16, col. 4] **of the cluster** ["a plurality of servers," line 59, col. 2] **as such availability is observed from a client-perspective.** ["the queuing monitor 85 monitors and controls the servers for each one of the service units of the service point but the queuing monitor 85 is not part of the cluster of service units and servers," lines 11-59, col. 3, Figs. 2-3]

In Applicant's response to the immediately previous Office Action (dated 4/7/2004), Applicant noted and explained that Gossler did not disclose specific aspects that are recited in this claim. Those recited aspects include:

- "Dynamically Determining"
- "Monitoring Application-Layer Availability"
- "As Such Availability Is Observed From A Client-Perspective"

In this Action, the Office indicated that it did not find Application's position to be persuasive. For each of these aspects which are missing from Gossler, the Application provides its argument from its response to the previous Action, the Office's rejoinder to that argument, and Applicant's rebuttal of that rejoinder.

1 "Dynamically Determining"

2 Applicant's Previous Response:

3 This claim recites, "dynamically determining present members of a load-
4 balancing cluster." Applicant submits that Gossler's determination of the
5 membership consists of a receiving a static membership definition (called the
6 "trigger message 87") and that this is not "dynamically determining" as recited in
7 the claim.

8 Gossler uses the conventional approach to determining cluster
9 membership. That approach includes using a static definition, which is typically
10 supplied by a manually maintained configuration data.

11 On page 7, lines 6-14, the Application discusses the conventional approach
12 of static definition of cluster membership (which is what Gossler does):

13
14 Static Cluster Membership. Conventional exocuster application-layer monitors
15 monitor a static set of hosts; there is no notion of a cluster. That is, they are not
16 cluster-aware. They are not dynamic. In other words, they cannot dynamically
17 monitor all of the members of the cluster as members are added and removed.
18 They can monitor new members (or stop monitoring old members) once the
19 membership is statically defined specifically for the monitor. However, the
20 conventional exocuster application-layer monitors cannot dynamically begin
21 monitoring new members as they are added to the cluster or dynamically stop
22 monitoring old members as they are removed.

23 Col. 3, lines 14-17, Gossler describes how the queuing monitor 85
24 "receives the trigger message 87 which contains the name of the service unit
25 queues 57 and the name of the servers to be started." The list of server names in
the "trigger message" is a static definition of the cluster membership analogous to
the conventional approach described in the background of the Application.

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324.9258
F: 509.323.8979
www.leeandhayes.com

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1 Therefore, Applicant submits that Gossler does not disclose "dynamically
2 determining present members of a load-balancing cluster," as recited in the claim.

3 Office's Rejoinder:

4 Starting on p. 8 of the Action, the Office's rejoinder to that argument is as
5 follows:

6 Applicant argued that Gossler does not teach dynamic determining present
7 members of a load balancing cluster (Remarks, page 19 continue to first paragraph
8 page 20). More specifically, the applicant pointed out that Gossler's determination of
9 the membership consists of a receiving membership definition and that it is not
10 dynamically determining. In response, the examiner had never cited this portion of
11 Gossler's invention for the purpose of claim's limitation rejection. In claim 1 rejection
12 above, the examiner clearly cited that dynamically determining present members
13 (servers, line 42 column 4) of a load balancing cluster (dynamic workload balancing
14 method provided by the queuing monitor 85 or any other queuing monitor order to
15 employ an optimized number of servers for each service unit to be monitored, lines 40-
16 43 column 4). To be more specifically, Gossler teaches that the balancing method is
17 fully dynamic and all configuration data can be changed while the system is running
18 such that when the current number of service requests in the respective service unit is
19 less or equal than the specified threshold value, the queuing monitor does not need to
20 start additional servers; however, if there are less servers running than the specified
21 minimum number of servers, the queuing monitor re-starts just as many servers to
22 reach this minimum number of servers (lines 16-25 column 5; lines 51-55 column 6.
23
24 The reference meets the limitation as claimed.
25

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324.9256
F: 509.323.8979
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Applicant's Rebuttal:

Applicant acknowledges that Gossler discloses a dynamic workload balancing method in which configuration data may be changed while the system is running (see, col. 6, lines 51-55). As shown by cited portions of Gossler (esp. Fig. 4 and its related textual discussion) and as explained by the Office in the Action, Gossler activates/deactivate servers in a given set of servers (e.g., servers 60-68 of Fig. 2). Applicant submits that such actions, however, are not equivalent to "dynamically determining present members of a load-balancing cluster," as recited in the claim.

In particular, Gossler discloses a defined set of servers (e.g., servers 60-68 of Fig. 2) for each service point (e.g., point 50). The set of servers appears to be statically defined (like is conventional). No where does Gossler disclose that its defined set of servers may be dynamically changed. Indeed, Applicant submits the following sections of Gossler suggest the statically defined nature of the set of servers available to each service point:

The service unit queue 57 is linked with a plurality of servers 60-68, whereby the servers 60-68 carry out the service requests queued in the service unit queue 57. [col. 2, lines 58-61]

The queuing monitor 85 receives the control information about each service unit 55 to be monitored from the selected setup profiles 90-94 which contain the following customer defined service unit parameters:

1. ...
2. The name(s) of the associated server(s) 60-68 of the respective service unit 55 for the processing of the incoming service requests.
3. ...
4. ...

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324.9256
F: 509.323.8979
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5. A threshold value which defines the number of servers that should be linked in order to quickly process the business requests in the respective service unit queue. The number of servers that should be linked is determined by the number of business requests in the queue (the queue depth) divided by the threshold value. The number of servers that should be linked in combination with the maximum number of servers eventually determines the number of servers 60-68 to be linked by each service unit 55. [col. 3, line 60 to col. 4, line 24]

Therefore, Applicant submits that Gossler's activation/deactivation of servers from its defined set of servers does not equate to "dynamically determining present members of a load-balancing cluster," as recited in the claim.

"Monitoring Application-Layer Availability"

Applicant's Previous Response:

As recited in this claim, the monitoring is not just of the *availability* of one or more members of the cluster, but of the "*application-layer availability*" of one or more members. Applicant submits that Gossler never discloses monitoring the "application-layer availability" of its servers.

The Office does not cite any portion of Gossler for disclosing the concept of "application-layer availability." Instead, the Office cites col. 3, lines 54-57, of Gossler for disclosing just the "application-layer" modifier of "availability." That portion of Gossler is quoted here: "The queuing monitor 85 provides a dynamic workload balancing and a defined structure for the processes of the server." However, that portion of Gossler never discusses, teaches, suggestions, etc.

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-8258
F: 509.323-8979
www.leeandhayes.com

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1 anything related to the "application-layer." It does not define it or distinguish it
2 from any other layer. Furthermore, that portion of Gossler never discusses,
3 teaches, suggestions, etc. anything related to "application-layer availability"
4 monitoring.

5 Applicant submits that neither this cited portion of Gossler nor any portion
6 of Gossler discloses, teaches, or even suggests "application-layer availability"
7 monitoring, as recited in the claim.

8 Office's Rejoinder:

9 One page 9 of the Action, the Office's rejoinder to that argument is as
10 follows:

11 Applicant argued that Gossler does not teach application-layer (Remarks, page
12 20). In response, as in the claim rejection above, Gossler clearly teaches the queuing
13 monitor provides a dynamic workload balancing and a defined structure for the
14 processes of the server (lines 54-57 column 3). The processes here are clearly
15 application layer. Furthermore, Gossler teaches it is to be understood that servers or
16 clients can be any type of processes, computer programs or the like (lines 26-28 column
17 1). The reference meets the limitation as claimed.

18 Applicant's Rebuttal:

19 Line 6 of page 5 of the Application states, the "application-layer refers to
20 the well-known OSI [communications] model." The Office submits that the
21 "processes [of Gossler] are clearly application-layer," but the Office supplies no
22 object evidence from Gossler that its monitoring is focused at the "application-
23 layer" for communications between computing systems While the Gossler's
24 components (e.g., "processes") may be literally "applications," that is not
25

dispositive to determination whether Gossler discloses monitoring at the
“application-layer.”

More particularly, Applicant respectfully submits that Gossler does not disclose “application-layer availability” of the members of a cluster. This concept is discussed throughout the Application. For example, “application-layer availability” is discussed at:

- Page 3, line 19
- Page 5, line 5 to page 7, line 14
- Page 18, line 6 to page 19, line 6

Since “application-layer availability” is the focus of the second element (“monitoring”) of the claim, Gossler cannot anticipate the claim if it does not disclose the very object of the “monitoring.”

“As Such Availability Is Observed From a Client-Perspective”

Applicant’s Previous Response:

This claim recites, “as such availability is observed from a client-perspective.” Applicant submits that Gossler observes availability from within the collective (called a “service point” herein) of components that are being monitored and controlled.

The Office cites lines 11-59, col. 3, (and Figs. 2-3), of Gossler for disclosing “as such availability is observed from a client-perspective,” as recited in the claim.

The Office states, “the queuing monitor 85 monitors and controls the servers for each one of the service units of the service point but the queuing

1 monitor 85 is not part of the cluster of service units and servers." However, that
 2 portion of Gossler never discusses, teaches, suggestions, etc. anything related to
 3 the "perspective" from which the availability is observed.

4 From this the Applicant understands that the Office is arguing that since the
 5 queuing monitor is "not part of the cluster of service units and servers" that this
 6 equates to observing availability from a client's perspective. If the premise of the
 7 argument is true, then Applicant submits that there is nothing in Gossler to
 8 conclude that the queuing monitor would be observing from a client-perspective.

9 Applicant submits that Gossler needs to provide something more for such a
 10 logical conclusion to be drawn simply from a premise that the queuing monitor is
 11 "not part of the cluster of service units and servers." Applicant asks the Office to
 12 show the something more.

13 Furthermore, Applicant submits that the premise of the argument is not
 14 valid. That premise again is that the "queuing monitor 85 is not part of the cluster
 15 of service units and servers" which the Office equates to being outside the cluster
 16 recited in the claim.

17 As shown in Fig. 2 (reproduced on the right), the
 18 queuing monitor 85 is included inside the dotted line
 19 which defines the service point 50. Fig. 3 depicts the
 20 same relationship where queuing monitor 85 is inside
 21 the dotted line which defines the service point 50.

22 In other words, it is not outside, but, instead,
 23 inside the depicted collection being monitored and
 24 controlled. That collection is inside the dotted line and
 25 is called the service point.

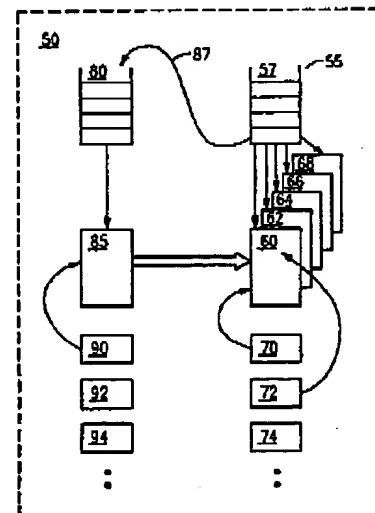


FIG.2

1 In addition to the visual evidence of Figs. 2 and 3 that the queuing monitor
2 is part of an inclusive group (rather than on the outside looking in), there is textual
3 evidence as well. Col. 3, lines 11-12, Gossler says, "the service point 50 further
4 *contains* an initiation queue 80 *connected with* a queuing monitor 85" [emphasis
5 added]. Col. 4, lines 37-39, Gossler says, "the queuing monitor 85 employs an
6 optimized number of servers for each service unit 55, 104 and 120 to be monitored
7 by the queuing monitor 85 *in the service point*" [emphasis added].

8 Therefore, Applicant submits that Gossler does not disclose "as such
9 availability is observed from a client-perspective," as recited in the claim.

10 Office's Rejoinder:

11 One page 10 of the Action, the Office's rejoinder to that argument is as
12 follows:

13 Applicant argued that Gossler does not teach a client perspective (Remarks, last
14 paragraph page 20 continue to pages 21-22). In response, besides explaining the
15 concept of client perspective in the claim rejection above wherein the queuing monitor
16 monitors and controls the servers for each one of the service units of the service point
17 but the queuing monitor is not part of the cluster of service units and servers, the
18 examiner again advises the applicant the details of Fig 3 in which the queuing monitor
19 85 is a separated component from the servers 80-88. The reference meets the
20 limitation as claimed.

21
22 Applicant's Rebuttal:

23 Applicant submits that the monitoring model disclosed by Gossler is
24 analogous to the "local" or "endocluster" monitor model, which is shown in Fig. 1
25 and described on p. 5, lines 19-23 in the Application:

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atty: Kasey C. Christie

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
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1 Local application-layer monitoring is done from within the
2 cluster. It is performed by the node manager and/or the nodes
3 themselves. For example, if node manager 110 monitored the availability
4 of the nodes 112a-f, then this is local monitoring. This type of monitoring
5 may be called "endocluster" application-layer monitoring.

6 Just like the Gossler's queuing monitor 85 monitors a collection of servers
7 (e.g., Gossler's servers 60-68), the node manager 110 monitors the nodes 112a-f.
8 Both Gossler's queuing monitor 85 and the exemplary node manager 110 are not
9 counted amongst the servers (e.g., Gossler's servers 60-68) and the exemplary
10 nodes 112a-f. Thus, Gossler discloses a model that is directly analogous to that
11 which the Applicant has described as being "endocluster" monitoring in its
12 Application.

13 The Application then defines (at page 5, line 24 to page 6, line 10)
14 "endocluster" monitoring to be the opposite of "exocluster" monitoring. This text
15 re-labels "exocluster" monitoring to be "client-perspective" monitoring.

16 Thus, Applicant submits that it follows that Gossler discloses a model that
17 is directly opposite of that which is recited in the claim. Applicant submits that
18 Gossler discloses a monitoring model that is the opposite of "client-perspective"
19 monitoring. Therefore, Applicant submits that Gossler does not disclose "as such
20 availability is observed from a client-perspective," as recited in the claim.

21 As shown above, Gossler does not disclose all of the claimed elements and
22 features of the claim. Accordingly, Applicant asks the Office to withdraw its
23 rejection of this claim.
24
25

Claims 2-20

These claims ultimately depend upon independent claim 1. As discussed above, claim 1 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Claim 21

The Office indicates that it rejects this claim for the same reasons as it rejects claims 1-2 above. If so, then Applicant submits that this claim is allowable for the same reasons given above for the allowability of claims 1-2.

Claims 22-37

These claims ultimately depend upon independent claim 21. As discussed above, claim 21 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324.9256
F: 509.323.8978
www.leeandhayes.com
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ony, Kasey C. Christie

Claim 38

The Office indicates that it rejects this claim for the same reasons as it rejects claim 21 above. If so, then Applicant submits that this claim is allowable for the same reasons given above for the allowability of claim 21.

Claim 39

The Office indicates that it rejects this claim for the same reasons as it rejects claims 1-2, 4, 7, and 10 above. If so, then Applicant submits that this claim is allowable for the same reasons given above for the allowability of claims 1-2, 4, 7, and 10.

Claims 40-45

These claims ultimately depend upon independent claim 39. As discussed above, claim 39 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
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Claim 46

The Office indicates that it rejects this claim for the same reasons as it rejects claims 1, 3-4, 6-7, and 10 above. If so, then Applicant submits that this claim is allowable for the same reasons given above for the allowability of claims 1, 3-4, 6-7, and 10.

Claims 47-53

These claims ultimately depend upon independent claim 46. As discussed above, claim 46 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Claim 54

The Office indicates that it rejects this claim for the same reasons as it rejects claims 1-2 and 10 above. If so, then Applicant submits that this claim is allowable for the same reasons given above for the allowability of claims 1-2 and 10.

Claims 55-57

These claims ultimately depend upon independent claim 54. As discussed above, claim 54 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Obviousness Rejections

Lack of *Prima Facie* Case of Obviousness (MPEP § 2142)

Applicant disagrees with the Office's obviousness rejections. Arguments presented herein point to various aspects of the record to demonstrate that all of the criteria set forth for making a *prima facie* case have not been met.

Based upon Gossler and Luzzi

The Office rejects 14, 16-19, 33, 35-36, 44-45, 52-53, and 55-57 under USC § 103(a) as being unpatentable over Gossler as modified by Luzzi. Applicant respectfully traverses the rejections of these claims. Applicant asks the Office to withdraw its rejection of these claims.

These claims ultimately depend upon independent claims 1, 21, 39, 46, and/or 54. As discussed above, these claims are allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

421 West Riverside, Suite 500
 Spokane, WA 99201
 P: 509.324-9256
 F: 509.323-8878
 www.leeandhayes.com
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Dependent Claims

In addition to its own merits, each dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each dependent claim where its base claim is allowable.

Conclusion

All pending claims are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the Office is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

Dated: 1-28-05

By: 

Kasey C. Christie
Reg. No. 40559
(509) 324-9256 x232
kasey@leehayes.com
www.leehayes.com

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9258
F: 509.323-8979
www.leehayes.com
lee&hayes

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